

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-28. (cancelled)

29. (new) A tissue rivet for holding pieces of tissue together and to prevent movement of said rivet in the tissue, said rivet being made of a bioabsorbable material, said rivet comprising a shaft having a leading end, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having a maximum cross-sectional dimension transverse to the mid-longitudinal axis, a truncated conical penetration head at said leading end, and a flexible member at said trailing end, said flexible member having a top, a bottom opposite said top, and a dimension larger than the maximum cross-sectional dimension of said shaft, said flexible member adapted to deform so as to conform to the surface of the tissue in which said rivet is inserted, said flexible member being at least in part curved when said flexible member is in contact with the tissue, said shaft having a plurality of flexible projections extending radially from said shaft, said flexible projections being separate and spaced apart from one another, at least one of said flexible projections capable of flexing toward said shaft when being inserted in the tissue.

30. (new) The rivet of claim 29, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.

31. (new) The rivet of claim 29, wherein said flexible member is at least in part circular.

32. (new) The rivet of claim 29, wherein said flexible member has an outer edge that is beveled.

33. (new) The rivet of claim 29, wherein said top of said flexible member is deformable to have an at least in part concave shape when said rivet is inserted into the tissue and said flexible member is in contact with the tissue.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

NW

34. (new) The rivet of claim 29, wherein said flexible member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said flexible member.

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35. (new) The rivet of claim 29, wherein said flexible member has a smaller mass than the mass of said shaft, whereby said flexible member is absorbed prior to said shaft so that said flexible member does not separate from said shaft.

36. (new) The rivet of claim 29, including at least five of said flexible projections.

37. (new) The rivet of claim 29, wherein said flexible projections are spaced apart from one another along the mid-longitudinal axis of said shaft.

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38. (new) The rivet of claim 29, wherein said flexible projections are spaced apart from one another about the mid-longitudinal axis shaft.

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39. (new) The rivet of claim 29, wherein said flexible projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.

40. (new) The rivet of claim 29, wherein said flexible projections are oriented in at least two arrays along the mid-longitudinal axis of said shaft.

41. (new) The rivet of claim 29, wherein said flexible projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.

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42. (new) The rivet of claim 29, wherein said flexible projections are positioned in a radially staggered configuration along said shaft.

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43. (new) The rivet of claim 29, wherein at least two of said flexible projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.

44. (new) The rivet of claim 29, wherein said shaft has an exterior surface, said flexible projections extending from said exterior surface along approximately one half the length of said shaft.

45. (new) The rivet of claim 29, wherein said shaft has an exterior surface, said flexible projections extending from said exterior surface along a portion of said shaft that is closer to said leading end of said shaft than said trailing end of said shaft.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

46. (new) The rivet of claim 29, wherein each of said flexible projections is a fin.

47. (new) The rivet of claim 46, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft.

48. (new) The rivet of claim 47, wherein said distal edge of said fin is curved.

49. (new) The rivet of claim 29, wherein said rivet comprises at least in part of a plastic material.

50. (new) The rivet of claim 29, wherein said rivet comprises at least in part polyglycolic acid.

51. (new) The rivet of claim 29, wherein said rivet comprises at least in part of a carbon composite.

52. (new) The rivet of claim 29, wherein said rivet comprises at least in part of a pliable material.

53. (new) The rivet of claim 29, wherein said shaft is hollow and further in combination with a driving instrument, said driving instrument comprising a rod having an outer diameter smaller than the inside diameter of said hollow shaft of said rivet and an upper handle portion having a diameter larger than the inside diameter of said hollow shaft of said rivet, said rod having a tapered tip, said tip forming the same angle as the angle of said conical penetration head of said rivet, whereby when said rod is fitted within said hollow shaft of the rivet, the surface of said tip of said driving instrument forms a smooth transition with said conical penetration head of said rivet.

54. (new) The combination of claim 53, wherein the length of said rod from said handle to said tapered tip is longer than the length of said rivet.

55. (new) The combination of claim 53, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.

56. (new) The rivet of claim 29, wherein said rivet has a length of approximately 10 mm.

57. (new) The rivet of claim 29, wherein said shaft of said rivet has a diameter of approximately 2 mm.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

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58. (new) The rivet of claim 29, wherein said flexible member has a diameter of approximately 2.5 mm.
59. (new) The rivet of claim 30, wherein said passageway has a diameter of approximately 1.25 mm.
60. (new) A tissue rivet for holding pieces of tissue together, said rivet being made of a bioabsorbable material, said rivet comprising a shaft having a leading end, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having a maximum cross-sectional dimension transverse to the mid-longitudinal axis, said shaft being at least in part conical at said leading end and having a flexible member at said trailing end, said flexible member having a top, a bottom opposite said top, and a dimension larger than the maximum cross-sectional dimension of said shaft, said flexible member adapted to deform so as to conform to the surface of the tissue in which said rivet is inserted, said top of said flexible member being at least in part concave when said flexible member is in contact with the tissue, said shaft having a plurality of flexible projections extending radially from said shaft, said projections being spaced apart and separate from one another.
61. (new) The rivet of claim 60, wherein said shaft is at least in part hollow.
62. (new) The rivet of claim 60, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.
63. (new) The rivet of claim 60, wherein said flexible member is at least in part circular.
64. (new) The rivet of claim 60, wherein said flexible member has an outer edge that is beveled.
65. (new) The rivet of claim 60, wherein said flexible member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said flexible member.
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66. (new) The rivet of claim 60, wherein said flexible member has a smaller mass than the mass of said shaft, whereby said flexible member is absorbed prior to said shaft so that said flexible member does not separate from said shaft.
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Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

67. (new) The rivet of claim 60, wherein said leading end has a truncated leading portion.

68. (new) The rivet of claim 60, including at least five of said flexible projections.

69. (new) The rivet of claim 60, wherein said flexible projections are spaced apart from one another along the mid-longitudinal axis of said shaft.

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70. (new) The rivet of claim 60, wherein said flexible projections are spaced apart from one another about the mid-longitudinal axis shaft.

+ 20r
71. (new) The rivet of claim 60, wherein said flexible projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.

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72. (new) The rivet of claim 60, wherein said flexible projections are oriented in at least two arrays along the mid-longitudinal axis of said shaft.
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73. (new) The rivet of claim 60, wherein said flexible projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.

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74. (new) The rivet of claim 60, wherein said flexible projections are positioned in a radially staggered configuration along said shaft.

+ 20z
75. (new) The rivet of claim 60, wherein at least two of said flexible projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.
New

76. (new) The rivet of claim 60, wherein said shaft has an exterior surface, said flexible projections extending from said exterior surface along approximately one half the length of said shaft.

77. (new) The rivet of claim 60, wherein said shaft has an exterior surface, said flexible projections extending from said exterior surface along a portion of said shaft that is closer to said leading end of said shaft than said trailing end of said shaft.

78. (new) The rivet of claim 60, wherein each of said flexible projections is a fin.

79. (new) The rivet of claim 78, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft.

80. (new) The rivet of claim 79, wherein said distal edge of said fin is curved.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

81. (new) The rivet of claim 60, wherein said flexible projections are adapted to flex towards said shaft as said rivet is being inserted into the tissue.

82. (new) The rivet of claim 60, wherein said rivet comprises at least in part of a plastic material.

83. (new) The rivet of claim 60, wherein said rivet comprises at least in part polyglycolic acid.

84. (new) The rivet of claim 60, wherein said rivet comprises at least in part of a carbon composite.

85. (new) The rivet of claim 60, wherein said rivet comprises at least in part of a pliable material.

86. (new) The rivet of claim 60, wherein said trailing end of said shaft is configured to cooperatively engage a driver instrument.

87. (new) The rivet of claim 60, wherein said trailing end of said shaft includes a depression configured to cooperatively engage a driver instrument.

88. (new) The rivet of claim 87, wherein said depression is at least in part spherical.

89. (new) The rivet of claim 60, in combination with a driver configured to insert said rivet into the tissue, said driver having a handle and a shaft extending from said handle.

90. (new) The combination of claim 89, wherein said shaft of said rivet includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft, said shaft of said driver being adapted to pass through said passageway of said rivet.

91. (new) The combination of claim 89, wherein said shaft of said driver has a length that is longer than the length of said rivet.

92. (new) The combination of claim 89, wherein said shaft of said driver has a distal end with a sharp tip.

93. (new) The combination of claim 92, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

94. (new) The combination of claim 89, wherein said driver has a projection that is adapted to cooperatively engage said trailing end of said shaft of said rivet.

95. (new) The rivet of claim 60, wherein said rivet has a length of approximately 10 mm.

96. (new) The rivet of claim 60, wherein said shaft of said rivet has a diameter of approximately 2 mm.

97. (new) The rivet of claim 60, wherein said flexible member has a diameter of approximately 2.5 mm.

98. (new) The rivet of claim 62, wherein said passageway has a diameter of approximately 1.25 mm.

99. (new) The rivet of claim 87, wherein said depression has a diameter of approximately 2 mm.

100. (new) A tissue rivet for holding pieces of tissue together, said rivet comprising:
a shaft having a leading end, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having an exterior surface with at least one projection adapted to resist expulsion of said rivet from within the tissue; and
a flexible member proximate said trailing end of said shaft, said flexible member having a top and a bottom opposite said top, said bottom adapted to contact tissue upon insertion of said rivet into the tissue, said flexible member being at least in part curved when said bottom of said flexible member contacts the tissue.

101. (new) The rivet of claim 100, wherein said shaft is at least in part hollow.

102. (new) The rivet of claim 100, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.

103. (new) The rivet of claim 100, wherein said flexible member is at least in part circular.

104. (new) The rivet of claim 100, wherein said flexible member has an outer edge that is beveled.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

105. (new) The rivet of claim 100, wherein said top of said flexible member is deformable to have an at least in part concave shape when said rivet is inserted into the tissue and said flexible member is in contact with the tissue.

106. (new) The rivet of claim 100, wherein said flexible member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said flexible member.

107. (new) The rivet of claim 100, wherein said flexible member has a smaller mass than the mass of said shaft, whereby said flexible member is absorbed prior to said shaft so that said flexible member does not separate from said shaft.

108. (new) The rivet of claim 100, wherein said leading end is at least in part conical.

109. (new) The rivet of claim 108, wherein said leading end has a truncated leading portion.

110. (new) The rivet of claim 100, including a plurality of said at least one projection.

111. (new) The rivet of claim 110, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft.

112. (new) The rivet of claim 110, wherein said projections are spaced apart from one another about the mid-longitudinal axis shaft.

113. (new) The rivet of claim 110, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.

114. (new) The rivet of claim 110, wherein said projections are oriented in at least two arrays along the mid-longitudinal axis of said shaft.

115. (new) The rivet of claim 110, wherein said projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.

116. (new) The rivet of claim 110, wherein said projections are positioned in a radially staggered configuration along said shaft.

117. (new) The rivet of claim 110, wherein at least two of said projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.

118. (new) The rivet of claim 110, wherein said projections extend from said exterior surface along approximately one half the length of said shaft.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

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119. (new) The rivet of claim 110, wherein said projections extend from said exterior surface along a portion of said shaft that is closer to said leading end of said shaft than said trailing end of said shaft.
- (120.) 120. (new) The rivet of claim 110, wherein each of said projections is a fin.
- (121.) 121. (new) The rivet of claim 120, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft
- (122.) 122. (new) The rivet of claim 121, wherein said distal edge of said fin is curved.
123. (new) The rivet of claim 110, wherein each of said projections is flexible.
124. (new) The rivet of claim 123, wherein said flexible projections are adapted to flex towards said shaft as said rivet is being inserted into the tissue.
125. (new) The rivet of claim 100, wherein said rivet comprises at least in part of a plastic material.
126. (new) The rivet of claim 100, wherein said rivet comprises at least in part polyglycolic acid.
127. (new) The rivet of claim 100, wherein said rivet comprises at least in part of a carbon composite.
128. (new) The rivet of claim 100, wherein said rivet is at least in part bioabsorbable.
129. (new) The rivet of claim 100, wherein said rivet comprises at least in part of a pliable material.
130. (new) The rivet of claim 100, wherein said trailing end of said shaft is configured to cooperatively engage a driver instrument.
131. (new) The rivet of claim 100, wherein said trailing end of said shaft includes a depression configured to cooperatively engage a driver instrument.
132. (new) The rivet of claim 131, wherein said depression is at least in part spherical.
133. (new) The rivet of claim 100, in combination with a driver configured to insert said rivet into the tissue, said driver having a handle and a shaft extending from said handle.
134. (new) The combination of claim 133, wherein said shaft of said rivet includes a passageway from said trailing end to said leading end along the mid-longitudinal

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

axis of said shaft, said shaft of said driver being adapted to pass through said passageway of said rivet.

135. (new) The combination of claim 133, wherein said shaft of said driver has a length that is longer than the length of said rivet.
136. (new) The combination of claim 133, wherein said shaft of said driver has a distal end with a sharp tip.
137. (new) The combination of claim 136, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.
138. (new) The combination of claim 133, wherein said driver has a projection that is adapted to cooperatively engage said trailing end of said shaft of said rivet.
139. (new) The rivet of claim 100, wherein said rivet has a length of approximately 10 mm.
140. (new) The rivet of claim 100, wherein said shaft of said rivet has a diameter of approximately 2 mm.
141. (new) The rivet of claim 100, wherein said flexible member has a diameter of approximately 2.5 mm.
142. (new) The rivet of claim 102, wherein said passageway has a diameter of approximately 1.25 mm.
143. (new) The rivet of claim 131, wherein said depression has a diameter of approximately 2 mm.
144. (new) A tissue rivet for holding pieces of tissue together, said rivet comprising:
 - a shaft having a leading end, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having an exterior surface with at least one projection adapted to resist expulsion of said rivet from within the tissue; and
 - a flexible member proximate said trailing end of said shaft, said flexible member having a top and a bottom opposite said top, said bottom adapted to contact tissue upon insertion of said rivet into the tissue, at least a portion of said

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

Nur bottom forming an included angle relative to the mid-longitudinal axis of said shaft that is greater than 90 degrees.

145. (new) The rivet of claim 144, wherein at least a second portion of said bottom of said flexible member forms an included angle relative to the mid-longitudinal axis of said shaft that is less than 90 degrees.
146. (new) The rivet of claim 144, wherein said shaft is at least in part hollow.
147. (new) The rivet of claim 144, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.
148. (new) The rivet of claim 144, wherein said top of said flexible member is deformable to have an at least in part concave shape when said rivet is inserted into the tissue and said flexible member is in contact with the tissue.
149. (new) The rivet of claim 144, wherein said flexible member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said flexible member.
150. (new) The rivet of claim 144, wherein said flexible member has a smaller mass than the mass of said shaft, whereby said flexible member is absorbed prior to said shaft so that said flexible member does not separate from said shaft.
151. (new) The rivet of claim 144, wherein said leading end is at least in part conical.
152. (new) The rivet of claim 144, including a plurality of said at least one projection.
153. (new) The rivet of claim 152, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft.
154. (new) The rivet of claim 152, wherein said projections are spaced apart from one another about the mid-longitudinal axis shaft.
155. (new) The rivet of claim 152, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.
156. (new) The rivet of claim 152, wherein said projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.
157. (new) The rivet of claim 152, wherein said projections are positioned in a radially staggered configuration along said shaft.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

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158. (new) The rivet of claim 152, wherein at least two of said projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.
159. (new) The rivet of claim 152, wherein each of said projections is a fin.
160. (new) The rivet of claim 159, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft.
161. (new) The rivet of claim 160, wherein said distal edge of said fin is curved.
162. (new) The rivet of claim 152, wherein each of said projections is flexible.
163. (new) The rivet of claim 162, wherein said flexible projections are adapted to flex towards said shaft as said rivet is being inserted into the tissue.
164. (new) The rivet of claim 144, wherein said rivet comprises at least in part polyglycolic acid.
165. (new) The rivet of claim 144, wherein said rivet comprises at least in part of a carbon composite.
166. (new) The rivet of claim 144, wherein said rivet is at least in part bioabsorbable.
167. (new) The rivet of claim 144, wherein said trailing end of said shaft is configured to cooperatively engage a driver instrument.
168. (new) The rivet of claim 144, in combination with a driver configured to insert said rivet into the tissue, said driver having a handle and a shaft extending from said handle.
169. (new) The combination of claim 168, wherein said shaft of said rivet includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft, said shaft of said driver being adapted to pass through said passageway of said rivet.
170. (new) The combination of claim 168, wherein said shaft of said driver has a distal end with a sharp tip.
171. (new) The combination of claim 170, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.
172. (new) The combination of claim 168, wherein said driver has a projection that is adapted to cooperatively engage said trailing end of said shaft of said rivet.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

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173. (new) The rivet of claim 144, wherein said rivet has a length of approximately 10 mm.
174. (new) The rivet of claim 144, wherein said shaft of said rivet has a diameter of approximately 2 mm.
175. (new) The rivet of claim 144, wherein said flexible member has a diameter of approximately 2.5 mm.
176. (new) A tissue rivet for holding pieces of tissue together, said rivet comprising:
a shaft having a leading end for insertion first into the tissue, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having an exterior surface with at least one projection adapted to resist expulsion of said rivet from within the tissue; and
a flexible member proximate said trailing end of said shaft, said flexible member having a top, a bottom opposite said top adapted to contact the tissue, and an outer perimeter between said top and said bottom, at least a portion of said outer perimeter being flexible relative to said shaft when said rivet is inserted into the tissue.
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177. (new) The rivet of claim 176, wherein said portion of said outer perimeter is moveable relative to said shaft between a first position where said portion of said perimeter forms an included angle that is generally perpendicular relative to the mid-longitudinal axis of said shaft and a second position where said portion of said perimeter forms an included angle that is obtuse relative to the mid-longitudinal axis of said shaft.
178. (new) The rivet of claim 177, wherein said outer perimeter includes a second portion opposite said portion in a plane transverse to the mid-longitudinal axis of said shaft, said second portion forming an acute angle relative to the mid-longitudinal axis of said shaft in the second position.
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179. (new) The rivet of claim 176, wherein said outer perimeter of said flexible member and said at least one projection of said shaft are configured to maintain a compression force therebetween when said rivet is deployed in the tissue.

Application No. 08/354,450
 Amendment dated January 7, 2004
 Reply to Office Action of July 7, 2003

180. (new) The rivet of claim 176, wherein the outer perimeter remains substantially in a single plane when moving relative to said shaft.

181. (new) The rivet of claim 176, wherein said shaft is at least in part hollow.

182. (new) The rivet of claim 176, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.

183. (new) The rivet of claim 176, wherein said top of said flexible member is deformable to have an at least in part concave shape when said rivet is inserted into the tissue and said flexible member is in contact with the tissue.

184. (new) The rivet of claim 176, wherein said flexible member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said flexible member.

185. (new) The rivet of claim 176, wherein said flexible member has a smaller mass than the mass of said shaft, whereby said flexible member is absorbed prior to said shaft so that said flexible member does not separate from said shaft.

186. (new) The rivet of claim 176, wherein said leading end is at least in part conical.

187. (new) The rivet of claim 176, including a plurality of said at least one projection.

188. (new) The rivet of claim 187, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft.

189. (new) The rivet of claim 187, wherein said projections are spaced apart from one another about the mid-longitudinal axis shaft.

190. (new) The rivet of claim 187, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.

191. (new) The rivet of claim 187, wherein said projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.

192. (new) The rivet of claim 187, wherein said projections are positioned in a radially staggered configuration along said shaft.

193. (new) The rivet of claim 187, wherein at least two of said projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.

194. (new) The rivet of claim 187, wherein each of said project ons is a fin.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

(20) 195. (new) The rivet of claim 194, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft.

(20) 196. (new) The rivet of claim 195, wherein said distal edge of said fin is curved.

197. (new) The rivet of claim 187, wherein each of said projections is flexible.

198. (new) The rivet of claim 197, wherein said flexible projections are adapted to flex towards said shaft as said rivet is being inserted into the tissue.

199. (new) The rivet of claim 176, wherein said rivet comprises at least in part polyglycolic acid.

200. (new) The rivet of claim 176, wherein said rivet comprises at least in part of a carbon composite.

201. (new) The rivet of claim 176, wherein said rivet is at least in part bioabsorbable.

202. (new) The rivet of claim 176, wherein said trailing end of said shaft is configured to cooperatively engage a driver instrument.

203. (new) The rivet of claim 176, in combination with a driver configured to insert said rivet into the tissue, said driver having a handle and a shaft extending from said handle.

204. (new) The combination of claim 203, wherein said shaft of said rivet includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft, said shaft of said driver being adapted to pass through said passageway of said rivet.

205. (new) The combination of claim 203, wherein said shaft of said driver has a distal end with a sharp tip.

206. (new) The combination of claim 205, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.

207. (new) The combination of claim 203, wherein said driver has a projection that is adapted to cooperatively engage said trailing end of said shaft of said rivet.

208. (new) The rivet of claim 176, wherein said rivet has a length of approximately 10 mm.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

209. (new) The rivet of claim 176, wherein said shaft of said rivet has a diameter of approximately 2 mm.

210. (new) The rivet of claim 176, wherein said flexible member has a diameter of approximately 2.5 mm.

211. (new) A tissue rivet for holding pieces of tissue together, said rivet comprising:
a shaft having a leading end, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having an exterior surface with at least one projection adapted to resist expulsion of said rivet from within the tissue; and
a member proximate said trailing end of said shaft, said member having a top, a bottom opposite said top, and an outer perimeter, said bottom adapted to contact tissue upon insertion of said rivet into the tissue, at least a first portion of said bottom adjacent to said outer perimeter being at an acute angle relative to the mid-longitudinal axis of said shaft, at least a second portion of said bottom adjacent to said outer perimeter being at an obtuse angle relative to the mid-longitudinal axis of said shaft.

212. (new) The rivet of claim 211, wherein said shaft is at least in part hollow.

213. (new) The rivet of claim 211, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.

214. (new) The rivet of claim 211, wherein said top of said member is deformable to have an at least in part concave shape when said rivet is inserted into the tissue and said member is in contact with the tissue.

215. (new) The rivet of claim 211, wherein said member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said member.

216. (new) The rivet of claim 211, wherein said member has a smaller mass than the mass of said shaft, whereby said member is absorbed prior to said shaft so that said member does not separate from said shaft.

217. (new) The rivet of claim 211, wherein said leading end is at least in part conical.

218. (new) The rivet of claim 211, including a plurality of said at least one projection.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

+202 219. (new) The rivet of claim 218, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft.

+202 220. (new) The rivet of claim 218, wherein said projections are spaced apart from one another about the mid-longitudinal axis shaft.

+202 221. (new) The rivet of claim 218, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.

+202 222. (new) The rivet of claim 218, wherein said projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.

+202 223. (new) The rivet of claim 218, wherein said projections are positioned in a radially staggered configuration along said shaft.

+202 224. (new) The rivet of claim 218, wherein at least two of said projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.

+202 225. (new) The rivet of claim 218, wherein each of said projections is a fin.

?01 226. (new) The rivet of claim 225, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft.

JQ +202 227. (new) The rivet of claim 226, wherein said distal edge of said fin is curved.

228. (new) The rivet of claim 218, wherein each of said projections is flexible.

229. (new) The rivet of claim 228, wherein said flexible projections are adapted to flex towards said shaft as said rivet is being inserted into the tissue.

230. (new) The rivet of claim 211, wherein said rivet comprises at least in part polyglycolic acid.

231. (new) The rivet of claim 211, wherein said rivet comprises at least in part a carbon composite.

232. (new) The rivet of claim 211, wherein said rivet is at least in part bioabsorbable.

233. (new) The rivet of claim 211, wherein said trailing end of said shaft is configured to cooperatively engage a driver instrument.

234. (new) The rivet of claim 211, in combination with a driver configured to insert said rivet into the tissue, said driver having a handle and a shaft extending from said handle.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

235. (new) The combination of claim 234, wherein said shaft of said rivet includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft, said shaft of said driver being adapted to pass through said passageway of said rivet.

236. (new) The combination of claim 234, wherein said shaft of said driver has a distal end with a sharp tip.

237. (new) The combination of claim 236, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.

238. (new) The combination of claim 234, wherein said driver has a projection that is adapted to cooperatively engage said trailing end of said shaft of said rivet.

239. (new) The rivet of claim 211, wherein said rivet has a length of approximately 10 mm.
Mm

240. (new) The rivet of claim 211, wherein said shaft of said rivet has a diameter of approximately 2 mm.

241. (new) The rivet of claim 211, wherein said flexible member has a diameter of approximately 2.5 mm.

242. (new) A tissue rivet for holding pieces of tissue together, said rivet comprising:
a shaft having a leading end for insertion first into the tissue, a trailing end opposite said leading end, and a mid-longitudinal axis therebetween, said shaft having an exterior surface with at least one projection adapted to resist expulsion of said rivet from within the tissue; and
a member proximate said trailing end of said shaft, said member having a top and a bottom opposite said top, said bottom being adapted to contact tissue, at least a portion of said member being moveable relative to said shaft between an undeployed position where said bottom surface is not in contact with the tissue and a deployed position where said bottom surface contacts the tissue, said member having a first shape in the deployed position and a second shape in the undeployed position, the first shape being different from the second shape.

243. (new) The rivet of claim 242, wherein said shaft is at least in part hollow.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

244. (new) The rivet of claim 242, wherein said shaft includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft.

245. (new) The rivet of claim 242, wherein said top of said member is deformable to have an at least in part concave shape when said rivet is inserted into the tissue and said member is in contact with the tissue.

246. (new) The rivet of claim 242, wherein said member has a greater surface area to mass ratio than said shaft for permitting a higher absorption rate of said bioabsorbable material of said member.

247. (new) The rivet of claim 242, wherein said member has a smaller mass than the mass of said shaft, whereby said member is absorbed prior to said shaft so that said member does not separate from said shaft.

248. (new) The rivet of claim 242, wherein said leading end is at least in part conical.

249. (new) The rivet of claim 242, including a plurality of said at least one projection.

250. (new) The rivet of claim 249, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft.

251. (new) The rivet of claim 249, wherein said projections are spaced apart from one another about the mid-longitudinal axis shaft.

252. (new) The rivet of claim 249, wherein said projections are spaced apart from one another along the mid-longitudinal axis of said shaft and about the mid-longitudinal axis of said shaft.

253. (new) The rivet of claim 249, wherein said projections are oriented in at least four arrays along the mid-longitudinal axis of said shaft.

254. (new) The rivet of claim 249, wherein said projections are positioned in a radially staggered configuration along said shaft.

255. (new) The rivet of claim 249, wherein at least two of said projections extend from said shaft in a same plane transverse to the mid-longitudinal axis of said shaft.

256. (new) The rivet of claim 249, wherein each of said projections is a fin.

257. (new) The rivet of claim 256, wherein each fin has two sides and a distal edge oriented away from the mid-longitudinal axis of said shaft.

258. (new) The rivet of claim 257, wherein said distal edge of said fin is curved.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

259. (new) The rivet of claim 249, wherein each of said projections is flexible.

260. (new) The rivet of claim 259, wherein said flexible projections are adapted to flex towards said shaft as said rivet is being inserted into the tissue.

261. (new) The rivet of claim 242, wherein said rivet comprises at least in part polyglycolic acid.

262. (new) The rivet of claim 242, wherein said rivet comprises at least in part of a carbon composite.

263. (new) The rivet of claim 242, wherein said rivet is at least in part bioabsorbable.

264. (new) The rivet of claim 242, wherein said trailing end of said shaft is configured to cooperatively engage a driver instrument.

265. (new) The rivet of claim 242, in combination with a driver configured to insert said rivet into the tissue, said driver having a handle and a shaft extending from said handle.

266. (new) The combination of claim 265, wherein said shaft of said rivet includes a passageway from said trailing end to said leading end along the mid-longitudinal axis of said shaft, said shaft of said driver being adapted to pass through said passageway of said rivet.

267. (new) The combination of claim 265, wherein said shaft of said driver has a distal end with a sharp tip.

268. (new) The combination of claim 267, wherein said tip is adapted to extend at least 4 mm beyond said leading end of said shaft of said rivet when said rivet is attached to said driver.

269. (new) The combination of claim 265, wherein said driver has a projection that is adapted to cooperatively engage said trailing end of said shaft of said rivet.

270. (new) The rivet of claim 242, wherein said rivet has a length of approximately 10 mm.

271. (new) The rivet of claim 242, wherein said shaft of said rivet has a diameter of approximately 2 mm.

272. (new) The rivet of claim 242, wherein said flexible member has a diameter of approximately 2.5 mm.

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

273. (new) A method for holding pieces of tissue together with a tissue rivet, the method comprising the steps of:

providing the rivet having a shaft with a leading end for insertion first into the tissue, a trailing end opposite the leading end, a mid-longitudinal axis therebetween, and a member proximate the trailing end of the shaft, the member having a top, a bottom opposite the top, the bottom being adapted to contact tissue, at least a portion of the member being moveable relative to the shaft between an undeployed position where the bottom surface is not in contact with the tissue and a deployed position where the bottom surface contacts the tissue, the member having a first shape in the deployed position and a second shape in the undeployed position, the first shape being different from the second shape;

inserting the rivet into the tissue until the bottom contacts the tissue; and

moving at least a portion of the member relative to the shaft to the deployed position.

274. (new) The method of claim 273, wherein the member forms an included angle relative to the mid-longitudinal axis of the shaft of said rivet that is greater than 90 degrees.

275. (new) The method of claim 273, wherein the member forms an included angle relative to the mid-longitudinal axis of the shaft of said rivet that is less than 90 degrees.

276. (new) The method of claim 273, further comprising the step of engaging a driving instrument to the rivet.

277. (new) The method of claim 276, wherein the rivet has a passageway between the leading and trailing ends of the shaft and the driving instrument includes a handle, a shaft extending from the handle, and a face at a junction of the handle and the shaft of the driving instrument, the step of engaging including inserting the shaft of the driving instrument into the passageway until the face of the driving instrument contacts the top of the member.

278. (new) The method of claim 276, wherein the step of engaging the driving instrument with the rivet is performed so that the driving instrument does not

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

contact the bottom of the flexible member.

279. (new) The method of claim 273, wherein the step of inserting includes pushing the rivet into the tissue.

280. (new) The method of claim 273, wherein the step of inserting includes inserting the rivet into a portion of a meniscus of a human knee.
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281. (new) The method of claim 280, wherein the step of inserting includes inserting the leading end of the shaft into the meniscus in a direction away from the center of the knee.

282. (new) The method of claim 273, wherein the shaft has an exterior surface with at least one projection adapted to resist expulsion of the rivet from within the tissue, further comprising the step of compressing the pieces of tissue together between the at least one projection and the flexible member.

283. (new) A method for holding pieces of tissue together with a tissue rivet, the method comprising the steps of:
J12
providing the rivet having a shaft with a leading end for insertion first into the tissue, a trailing end opposite the leading end, and a flexible member proximate the trailing end of the shaft, the flexible member having a top and a bottom opposite the top;
engaging a driving instrument to the rivet; and
inserting the rivet into the tissue until the bottom of the flexible member contacts the tissue and the flexible member deforms to conform to the curvature of the tissue adjacent the rivet.

284. (new) The method of claim 283, wherein the flexible member forms an included angle relative to the mid-longitudinal axis of the shaft of said rivet that is greater than 90 degrees.

285. (new) The method of claim 283, wherein the flexible member forms an included angle relative to the mid-longitudinal axis of the shaft of said rivet that is less than 90 degrees.

286. (new) The method of claim 283, wherein the rivet has a passageway between the leading and trailing ends of the shaft and the driving instrument includes a
719

Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

handle, a shaft extending from the handle, and a face at a junction of the handle and the shaft of the driving instrument, the step of engaging including inserting the shaft of the driving instrument into the passageway until the face of the driving instrument contacts the top of the flexible member.

287. (new) The method of claim 286, wherein the step of engaging the driving instrument with the rivet is performed so that the driving instrument does not contact the bottom of the flexible member.

288. (new) The method of claim 283, wherein the step of engaging includes snap-fitting the rivet onto a portion of the driving instrument.

289. (new) The method of claim 283, wherein the step of inserting includes pushing the rivet into the tissue.

290. (new) The method of claim 283, wherein the step of inserting includes inserting the rivet into a portion of a meniscus of a human knee.
JL

291. (new) The method of claim 290, wherein the step of inserting includes inserting the leading end of the shaft into the meniscus in a direction away from the center of the knee.

292. (new) The method of claim 283, wherein the shaft has an exterior surface with at least one projection adapted to resist expulsion of the rivet from within the tissue, further comprising the step of compressing the pieces of tissue together between the at least one projection and the flexible member.

293. (new) A method for holding pieces of tissue together with a tissue rivet, the method comprising the steps of:

providing the tissue rivet having a shaft with a leading end for insertion first into the tissue, a trailing end opposite the leading end, and a member proximate the trailing end of the shaft, the member having a top, a bottom opposite the top, and an outer perimeter; and

inserting the rivet into the tissue until the bottom of the member contacts the tissue, at least a first portion of the bottom adjacent to the outer perimeter of the member being at an acute angle relative to the mid-longitudinal axis of the shaft, at least a second portion of the bottom adjacent to the outer perimeter of

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Application No. 08/354,450
Amendment dated January 7, 2004
Reply to Office Action of July 7, 2003

N n the member being at an obtuse angle relative to the mid-longitudinal axis of the shaft.

294. (new) The method of claim 293, further comprising the step of engaging a driving instrument to the rivet.

295. (new) The method of claim 294, wherein the rivet has a passageway between the leading and trailing ends of the shaft and the driving instrument includes a handle, a shaft extending from the handle, and a face at a junction of the handle and the shaft of the driving instrument, the step of engaging including inserting the shaft of the driving instrument into the passageway until the face of the driving instrument contacts the top of the member.

296. (new) The method of claim 294, wherein the step of engaging the driving instrument with the rivet is performed so that the driving instrument does not contact the bottom of the flexible member.

297. (new) The method of claim 293, wherein the step of inserting includes pushing the rivet into the tissue.

JL 7/19 298. (new) The method of claim 293, wherein the step of inserting includes inserting the rivet into a portion of a meniscus of a human knee.

299. (new) The method of claim 298, wherein the step of inserting includes inserting the leading end of the shaft into the meniscus in a direction away from the center of the knee.

300. (new) The method of claim 293, wherein the shaft has an exterior surface with at least one projection adapted to resist expulsion of the rivet from within the tissue, further comprising the step of compressing the pieces of tissue together between the at least one projection and the flexible member.